BOGEN®
COMMUNICATIONS, INC.

Gold Seal Series Amplifiers

Models GS-35, GS-60, GS-100, GS-150, GS-250

The Bogen Gold Seal Series amplifiers are an extraordinary addition to Bogen's line of quality audio amplifiers. Designed with the sound contractor in mind, they provide unparalleled flexibility and versatility, without the need for expensive add-on modules.

Unlike other typical amplifier lines, the professional sound contractor need not purchase a higher-powered amplifier just to get more extensive features or flexibility. Each of the Gold Seal Series amplifiers — 250W, 150W, 100W, 60W and 35 W models — incorporate the exact same set of features.

In addition to its extensive input flexibility, the Gold Seal Series amplifiers offer a combination of features not found in any other commercial amplifier.

Features

- 4 dedicated microphone inputs (XLR connectors)
- 1 selectable Mic/Tel input
- 1 selectable Mic/Aux input
- 1 dedicated Aux input
- 4-ohm direct coupled output
- 8-ohm, 25V, 25VCT, and 70V transformer-coupled outputs
- 35W, 60W, 100W, 150W and 250W versions
- Rack mountable — 2RU package for all models
- Dual function 10-band graphic equalizer (Acoustic EQ/Feedback Control)
- True loudness contour function
- Aphex® Aural Exciter for improved intelligibility
- Switchable phantom power supply
- Variable Aux input muting

- Remote master volume control capability
- Input muting via contact on all inputs
- Voice activated aux muting on Tel input
- Automatic level control on Tel input
- Aux fade back after Tel page
- Preamp out/Power amp in connections
- Booster amp output connection
- Tape output connection
- Balanced line driver output (using WMT1A accessory)
- Lo-cut filter for Mic channels
- 3-speed fan cooling (GS-250 only)
- Available tamper resistant front cover
- Available rack mounting kit
- Available remote volume control

<u>WARNING</u>

The Warning label calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to the unit or **personal injury**. Do not proceed beyond a warning label until the indicated conditions are fully understood and met.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Contents

Important Safety Instructions

1. Read and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. Unplug the product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand or table, where the product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation, to protect it from overheating. These openings must not be blocked or covered. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated only from the type of power source indicated on the marking label.
8. The power supply included with this product has a 2-prong plug for connection with a standard electrical outlet. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
9. Do not overload wall outlets and extension cords as this can result in the risk of fire or electrical shock.
10. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out points that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
11. To reduce the risk of electric shock, do not disassemble this product, but return it to the factory service center when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect assembly can cause electric shock when the product is subsequently used.
12. Unplug this product from the wall and refer servicing to the factory service center personnel under the following conditions:
    a. When the power supply cord or plug is damaged or frayed.
    b. If liquid has been spilled into the product.
    c. If the product has been exposed to rain or water.
    d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage.
    e. If the product has been dropped or the cabinet has been damaged
    f. If the product exhibits a distinct change in performance.

NOTE: SAVE THESE INSTRUCTIONS

Unpacking

Packing List

The unit was carefully checked before leaving the factory.

The Gold Seal Series carton contains the following components:

1 - Gold Seal Series unit

1 - User Manual

1 - Product Registration Card

Accessories

The following accessories are available for your Gold Seal Amplifier at additional cost:

• Model GSTRC — A plexiglass cover to protect control settings

• Model GSRPK — Rack mounting installation kit.

• Model GSRVC — A remote volume control to control volume of the amplifier from distances up to 1000 feet.

Features

Front Panel (All Models)
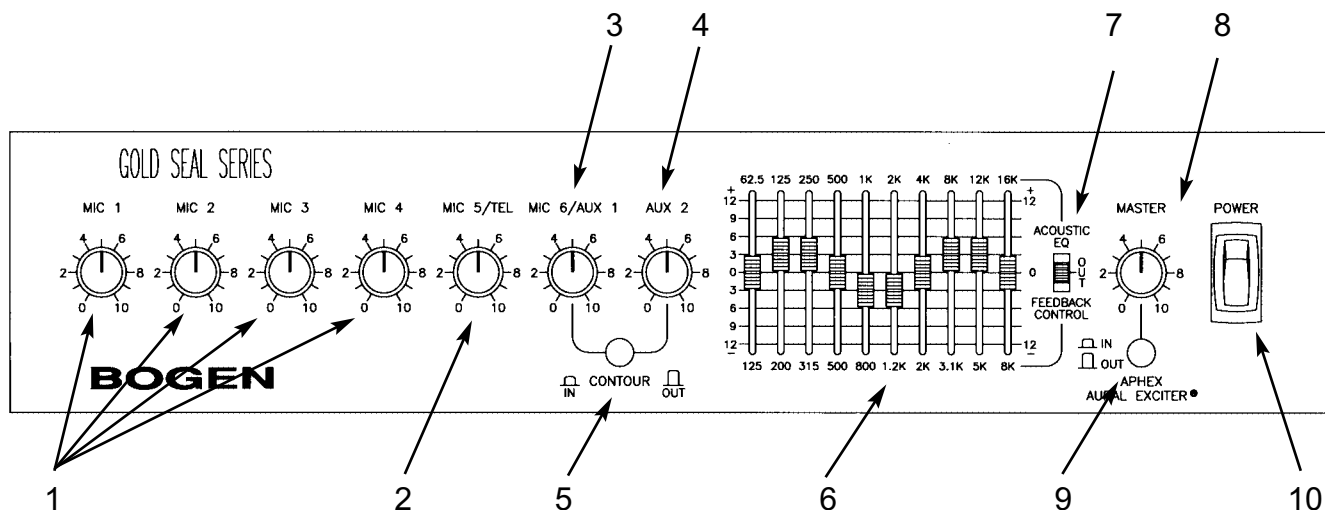
1. MIC 1 to 4 - Individual level controls for dedicated microphone inputs.

2. MIC 5/TEL - Individual level control for Mic or Tel input depending on input mode selected.

3. MIC 6/AUX 1 - Individual level control for Mic or Aux 1 input depending on input mode selected.

4. AUX 2 - Individual level control for dedicated Aux 2 input.

5. Contour - Enables or disables loudness equalization. Affects only Aux 2 and Mic 6/Aux 1 if set in aux mode.

6. Band Dual Mode Equalizer - 10 band graphic EQ with dual center frequency ability.

7. Dual Mode Equalizer Selector Switch - Selects EQ frequency bands or EQ defeat (OUT).

8. MASTER - Master output level control.

9. APHEX AURAL EXCITER - Enables or disables the Aphex Aural Exciter effect. Affects all input signals.

10. POWER - AC Power switch.

Features

Rear Panel (GS-35, GS-60, GS-100 & GS-150)
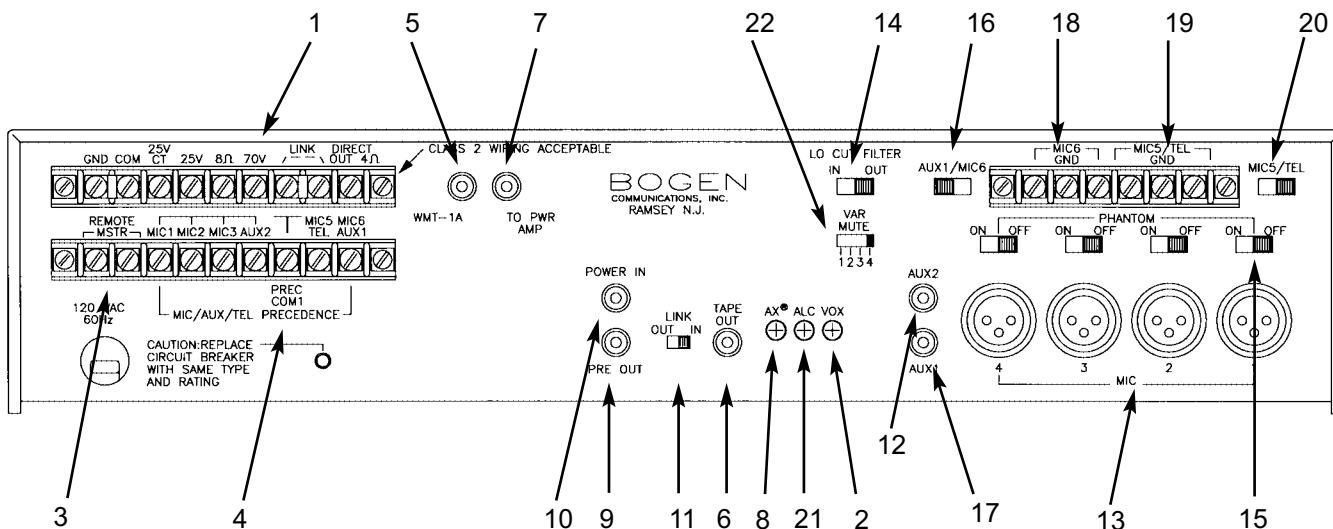
1. Amplifier Output - Terminal strip containing all the Gold Seal output taps.

2. VOX - Variable control for adjusting TEL input signal level trigger point for automatic muting of Aux input (works only in the TEL input mode).

3. REMOTE MSTR - Screw terminal pair for connection of remote master volume control (Bogen model: GSRVC).

4. MIC/AUX/TEL PRECEDENCE - Screw terminal connections that allow externally controlled muting of individual inputs.

5. WMT-1A - RCA connection for Bogen model WMT-1A 600 ohm balanced line matching transformer.

6. TAPE OUT - RCA unbalanced output, pre EQ and master volume.
    (Mics are post Lo-Cut filter, see #14 below).

7. TO PWR AMP - RCA connection provides a high impedance, unbalanced signal level output as a feed to high impedance inputs of other external amplifiers.

8. AX - Variable control for adjusting the amount of Aphex Aural Exciter effect.

9. PRE OUT - RCA unbalanced output from preamp/mixer stage for connection to external signal processing equipment (used in conjunction with POWER IN and LINK switch).

10. POWER IN - RCA unbalanced direct input to power amp stage for connection to external signal processing equipment (used in conjunction with PRE OUT and LINK switch).

11. LINK - Switch that makes or breaks the internal connection between preamp/mixer stage and power amp stage for use with external signal processing equipment.

12. AUX 2 - RCA unbalanced input for dedicated Aux 2 input.

13. MIC 1 to 4 - Balanced XLR connectors for dedicated microphone inputs.

14. LO CUT FILTER - Enables or disables low frequency roll off (65 Hz) for all microphone inputs.

15. PHANTOM (MIC 1 to 4) - Individual switches enables or disables phantom power to each of the 4 dedicated microphone inputs (MIC 5 and MIC 6 phantom power selection — see page 6).

Features

Rear Panel (GS-250)
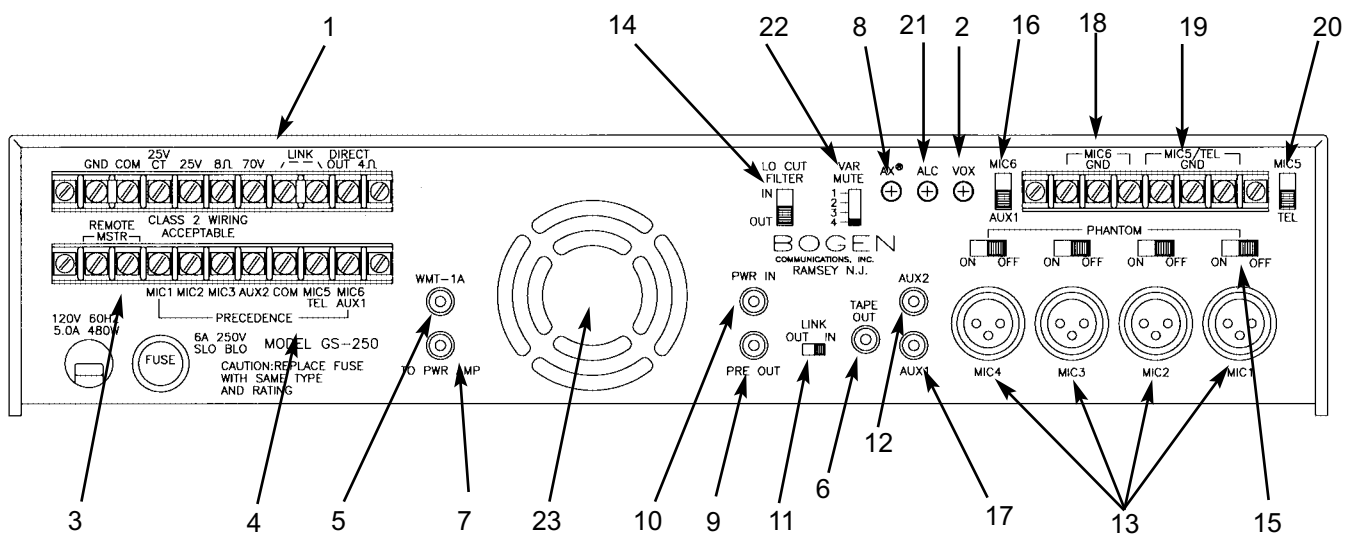
16. MIC 6/AUX 1 - Switch selects either MIC 6 or AUX 1 connections as input.

17. AUX 1 - RCA unbalanced input for Aux 1 input signal (works only when AUX 1/MIC 6 switch is set to AUX 1).

18. MIC 6 - Screw terminals for balanced microphone (active only when AUX 1/MIC 6 switch is set to MIC 6).

19. MIC 5/TEL - Dual function Screw terminals for either balanced microphone or 600 ohm balanced input from telephone page port.

20. MIC 5/TEL - Switch selects mode of operation for MIC 5/TEL input.

21. ALC - Variable control to adjust the amount of automatic level control applied to the TEL input (works only in the TEL input mode).

22. VAR MUTE - 4 Switch selectable levels of Aux input signal muting during TEL page (works only in the TEL input mode).

23. Fan - 3 speed fan for efficient cooling (GS-250 only).

Input Connections

Installation Note
*Keep input leads away from the output leads and AC power cables. Unless the driving source provides a low-impedance output, keep the input lead under ten feet in length. Make all connections to the unit with the POWER switch in the OFF position.*

MIC 1- 4


```
1 — GND
2 — +
3 — -
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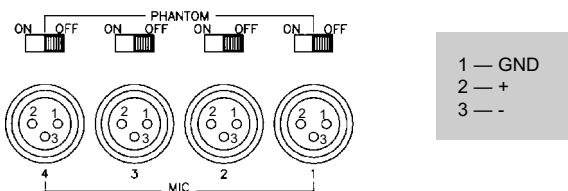
MIC 1 through 4 utilize female XLR-type microphone connectors. A slide switch located above each XLR connector is used to supply phantom power for condenser microphones.

MIC 5/TEL
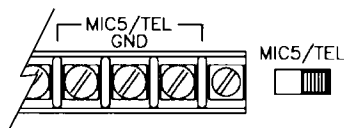
The MIC 5/TEL input is designed to accept input from a microphone or from a telephone line. A slide switch is provided to select MIC 5 or TEL input. To connect a microphone, place the MIC 5/TEL switch in the MIC position. Use two conductor shielded cable and connect the cable shield to the center GND terminal. To use the TEL input, place the MIC 5/TEL switch in the TEL position and connect the 600 ohm telephone paging source (dry signal only - no DC voltage) to the MIC 5/TEL screw terminals.

MIC 6/AUX 1

The MIC 6/AUX 1 input is designed to accept input from a microphone using terminal strip connections or from a high level auxiliary source such as a tuner or CD player using the AUX 1 RCA jack. A slide switch is used to select input type. Connect a microphone to the screw terminals labeled MIC 6 (works only when AUX 1/MIC 6 switch is in the MIC 6 position). Use two conductor shielded cable and connect the cable shield to the center GND terminal. Connect an auxiliary input

source to the AUX 1 RCA jack (only works when the AUX 1/MIC 6 switch is in the AUX1 position).

AUX 2

The AUX 2 input uses an RCA plug and accepts input from a dedicated AUX source.

Phantom Power for MIC 5 & MIC 6

A single internal jumper is provided to supply phantom power to both MIC 5 and MIC 6. The amplifier is shipped with the jumper in the OFF position. See the figure below for the location of the phantom power jumper.
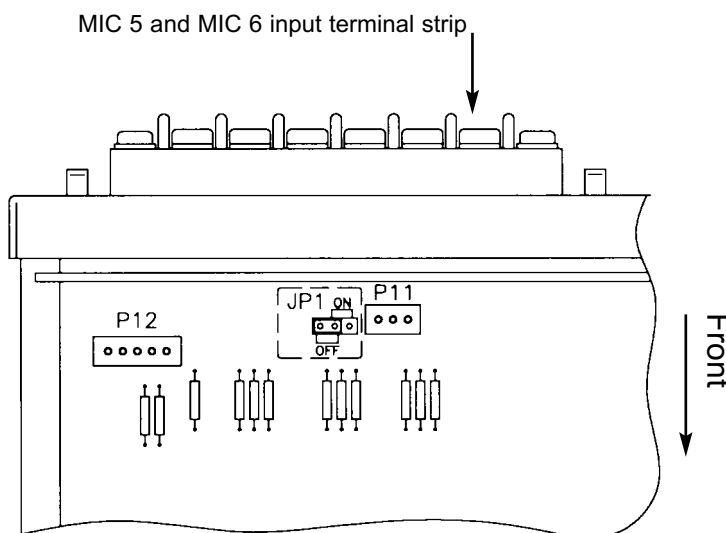
Phantom Power Jumper Location For Mic 5 and Mic 6

Warning
Removal of the amplifier cover exposes internal components and presents an electrical shock hazard. For this reason, do not perform any functions requiring removal of the cover of the amplifier unless you are qualified to do so. Always disconnect AC power from the unit before attempting to remove the cover.

Input Connections

Remote Volume Control

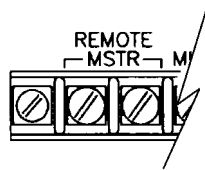If remote volume control is desired, connect the Bogen accessory GS-RVC remote volume control to the screw terminals marked REMOTE MSTR. Wire length can be up to 1000 feet using 22 gauge wire.

Precedence Connections
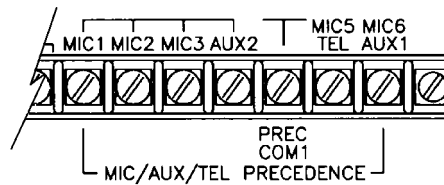
Precedence connections allow any combination of inputs to be completely muted with a contact closure. Closing a contact across any of the precedence terminals and the PREC COM 1 terminal will mute that input. A customer-supplied normally-open SPST switch, push-to-talk switch, microphone switch, relay or telephone system contact can be used to provide the closure.

> Note: Activating the precedence control for Aux inputs completely mutes the input signal. The VAR MUTE control has no effect when muting inputs using precedence control.

Output Connections

Output Terminal Strip

4Ω Output LINK shorting clip

Shorting Clip - Leave for unbalanced lines.
Remove for balanced lines
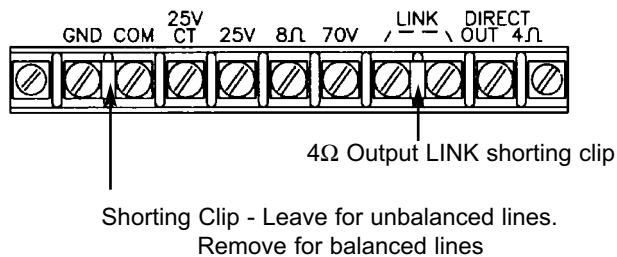
Speaker systems are connected directly to the speaker output terminals on the rear panel. Connect one speaker lead to the COM terminal and the other to the terminal corresponding to the impedance of the speaker system. Select only one of the output types.

For ground-referenced output operation (unbalanced systems), leave the shorting clip between COM and GND. For special applications that require floating outputs (balanced systems), remove the shorting clip between COM and GND.

To use the DIRECT OUT (4-ohm) output, remove the shorting clip across the LINK terminals and connect one lead to the 4Ω terminal and the other to the GND terminal. The GND/COM shorting clip should remain in place.

> Note:The WMT-1A and TO PWR AMP outputs cannot be used if speaker GND/COM shorting clip is not installed.

WMT-1A

This RCA output jack, when used with a Bogen WMT-1A Line Matching Transformer accessory provides a 600 ohm output to feed a remote amplifier or a telephone line. Refer to the instructions provided with the WMT-1A accessory for connection information.
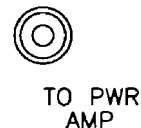

> Note: Shorting clip between GND/COM on the speaker output terminals strip must be installed to use this feature.

To Power Amp

The Gold Seal Series amplifier may be used to drive an external power amplifier (can only be used with unbalanced high impedance inputs).

> Note: Shorting clip between GND/COM on the speaker output terminals strip must be installed to use this feature.

Pre Out/Power In Jacks

These jacks permit the insertion of signal processing equipment into the signal path between the preamp output and the power amp input. The LINK switch should be in the IN position for normal operation. When using external signal processing equipment, place the switch in the OUT position and connect PRE OUT to the signal processing equipment's input. Connect the POWER IN to the signal processing equipment's output.
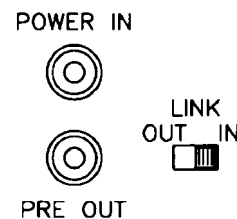
Tape Out

The TAPE OUT jack provides a line level output to feed a tape recorder. The output is not effected by the Master volume control or EQ, however, the Lo-cut filter does affect the microphone inputs.

Operation

Power Switch

The POWER switch applies power to the unit. The switch will illuminate when power is on.
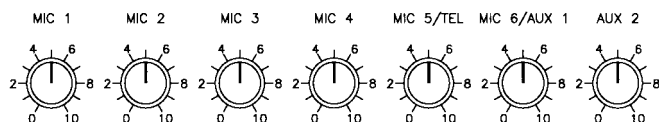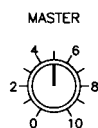
POWER

Individual Volume Controls

Each input is controlled by an individual volume control.

MIC 1   MIC 2   MIC 3   MIC 4   MIC 5/TEL   MIC 6/AUX 1   AUX 2

The overall volume is controlled by the MASTER control.
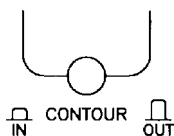
MASTER

Lo-Cut Filter

The Lo-Cut filter on the rear panel provides 3dB attenuation @ 65Hz on the microphone inputs. This helps reduce mic breath pop, wind noise and rumble.

LO CUT FILTER
IN   OUT

Contour Pushbutton Switch

This switch enables or bypasses the variable loudness contour. This feature only effects the Aux inputs.

CONTOUR
IN   OUT

This feature is designed to improve richness of sound by restoring the high and low frequencies that the ear is insensitive to at low volume levels. The effect diminishes as volume is increased.

Aphex Aural Exciter

The front panel APHEX AURAL EXCITER pushbutton enables or bypasses the Aphex Aural Exciter feature. This feature effects all inputs when enabled.

IN
OUT
APHEX
AURAL EXCITER
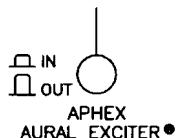
This audio enhancement system recreates the presence and realism that is lost in the audio amplification process, by regenerating the harmonics usually lost through amplification. This results in increased presence and clarity, increased intelligibility, greater perceived loudness (without adding extra power), and reduced listener fatigue.

The rear panel AX adjustment controls the mix of the Aphex effect with the audio signal. Counterclockwise rotation of the control minimizes the Aphex effect. Clockwise rotation of the control maximizes the Aphex effect.

AX

Dual Function Acoustic Equalizer

The unique dual-function equalizer can be used for acoustic shaping or for feedback control.

62.5 125 250 500 1K 2K 4K 8K 12K 16K

ACOUSTIC
EQ

FEEDBACK
CONTROL

125 200 315 500 800 1.2K 2K 3.1K 5K 8K
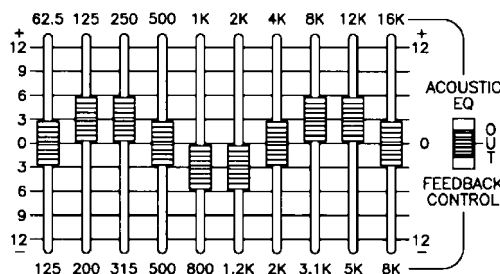
Note: When the switch is placed in the OUT position, the equalizer is bypassed for a flat response.

Acoustic Shaping Mode

When the switch is set in the ACOUSTIC EQ position, full range equalization (10 bands on 1 octave centers starting at 62.5Hz) is provided with a boost/cut of 12dB. In this mode, the equalizer can be used to compensate for room acoustics, or to satisfy the listening preference of the user.

Feedback Control Mode

When the switch is placed in the FEEDBACK CONTROL position, the equalizer can be used to reduce feedback and increase the effective gain of the system.

In feedback control mode the equalizer provides increased control of frequencies between 125Hz and 8KHz. The 10 bands are located on 2/3 octave centers with 12dB cut/boost on each band.

9

Operation

Telephone Paging Control

The MIC 5/Tel volume control on the front panel controls the volume of the telephone paging input when the control is set to the Tel mode (See page 6 for information on setting the Tel input mode).

The Tel input mode uses voice activated triggering for muting the AUX inputs and automatic level control for providing constant paging level. To optimize Tel input performance the ALC control may need to be adjusted.

ALC

The telephone page input features an automatic level control (ALC) which compensates for different voice levels and speaking styles of the individuals using the system. The amplifier is shipped with this control in the OFF (max. counterclockwise) position.

To adjust the ALC:
1. Rotate the MIC 5/TEL and MASTER controls to the highest level likely to be used.
2. Speak softly and distinctly into the telephone mouthpiece while adjusting the MIC 5/TEL volume control to the desired output level.
3. Speak in a loud voice directly into the telephone mouthpiece while rotating the ALC control clockwise to the point where the output of the amplifier is reduced to the same level as that obtained in Step 2.
4. The MIC 5/TEL and MASTER controls can be used to vary the overall volume without upsetting the ALC adjustment.

VOX

The telephone page input features voice activated Aux muting. This feature always mutes AUX 2 and only mutes AUX 1 when the AUX1/MIC 6 is set in that position.

The VOX control should be set so that only the desired signal is above the threshold level, while unwanted noise or signal is below it.

To adjust the sensitivity of the circuit:
1. Rotate the VOX control fully clockwise. While making a public address announcement and talking at a low level, the sound should not be choppy or missing parts of words. If it is choppy or intelligibility is poor, rotate control counterclockwise to the point where the sound is clear and crisp (but not to the maximum counterclockwise position).
2. If the background music shuts down when no page is in progress, rotate the control counterclockwise until the music will not shut down when no page is in progress.

VAR MUTE

The VAR MUTE control mutes the Aux input(s) only during telephone pages.

The control allows the user to select from 4 levels of muting: 1 = -60dB, 2 = -21dB, 3 = -10dB, 4 = 0dB.

Troubleshooting

Amplifier will not turn ON.	On the GS-35, GS-60, GS-100 and GS-150, depress the circuit breaker. On the GS-250, check the fuse. Replace fuse only with same type and rating.
No output on 70V, 25CT, or 25V.	Check that the LINK switch on the rear panel is in the IN position or external signal-processing equipment, if used, is functioning Make sure that the shorting clip on the DIRECT OUT 4Ω output is in place.
No telephone output.	Make sure that the MIC 5/TEL switch is in the TEL position. When connecting the telephone Tip & Ring, make sure to use the two outside terminals and not the center terminal (GND).
Aux input will not mute with telephone page.	Check that the VAR MUTE control is not set to 4 (0dB). This control adjusts the level of the background music when making a page. See page 10.
Microphone squeals or hums when using the 3-pin connectors but not when using screw terminals.	Check your wiring connections for the 3-pin connector. Pin 1 is the shield connection. Pins 2 and 3 connect to high and low leads on the mic cable.
Condenser Mic will not work.	Make sure that phantom power switch (MIC 1 - 4) is on. See page 6. Mic 5 and 6 use circuit board jumper. See page 6.
Telephone input cuts off the music, without making a page.	Adjust the VOX control on the rear panel to eliminate any unwanted noise that may be triggering the auto-mute circuit See page 10.
Telephone input is choppy or cuts off the beginning of a page.	Adjust the VOX control counterclockwise to make the trigger activate at a lower input signal level. See page 10.
The telephone page volume is too loud on some pages.	Adjust the ALC control on the rear panel. See page 10.
AUX 1 input not working	Make sure MIC 6/AUX 1 switch is in the AUX 1 position. Make sure the signal source is plugged into the AUX 1 RCA jack.

Bogen Service

The Bogen Gold Seal Series Amplifier is covered by a 3-year warranty and overnight installation-site replacement program (see below). If you encounter difficulty with your Bogen Gold Seal amplifier, please do not hesitate to ask our advice or assistance. Information can be obtained by calling our Application Engineering Department or Factory Service Department at (201) 934-8500.

Please be sure to fill out and return the product registration card included with this unit.

Best results are obtained when you:

- Read the User's Guide before operating
- Ensure all input and output wiring is correctly installed. If using the 4-ohm output, be sure to remove the shorting clip in the LINK position (see instructions on page 7).
- Ensure that the LINK switch (see the section on PRE OUT/POWER IN JACKS on page 7) is in the IN position when not using external signal processing equipment.

For warranty service, refer to the product registration card. Our customer service support center can be reached at (201) 934-8500, extension 1310, weekdays from 9AM to 8PM, Eastern time. Or you can e-mail support@bogen.com.

Warranty Service

If you are shipping the unit for a warranty repair, pack it in the original shipping container or similar container and ship prepaid via any responsible carrier. Include a letter stating the problem and proof of purchase showing the purchase date. The amplifier will be promptly repaired and returned to you freight prepaid while in warranty.

Service After Warranty Has Expired

If the amplifier requires service after the warranty has expired, ship it to us as per above, along with a letter giving us your name and address. We will examine the unit and contact you with an estimate of repairs before any repair is made. Return shipment of equipment not in warranty will be at the expense of the owner.

Technical Specifications

Power Rating (RMS):

GS-35 —	35 watts
GS-60 —	60 watts
GS-100 —	100 watts
GS-150 —	150 watts
GS-250 —	250 watts

Frequency Response:

Transformer Output —	65Hz to 20KHz +0/-2dB @ -2dB
Direct —	20Hz to 20KHz, +0/-1dB @ rated power

Distortion:

Direct —	0.5% (max.), 0.3% (typ.), 20Hz to 20KHz
Transformer —	0.5% (max.), 0.3% (typ.), 65Hz to 20KHz @ -2dB

Signal-to-Noise Ratio:

Fundamental —	-94dB or better;
Aux 1 & 2 —	-70dB
Tel —	-70dB or better @ 600 ohms
Mic 1 - 6 —	-60dB or better @ 200 ohms

Inputs/Outputs:

Mic —	6 Lo-Z balanced via 4 XLR connectors and 2 screw terminals. Sensitivity: 0.35mV (200Ω)
Aux—	2 Hi-Z RCA jacks. Sensitivity: 0.085V (10Kohms)
Telephone —	Screw terminals. Sensitivity: 0.07V (600Ω)
Output to Power Amp —	5V @ Rated Output via RCA jack
Power In/Pre Out —	In 1V/Out 1V via RCA jacks
WMT-1A Output —	25V @ Rated Output via RCA jack
Tape Output —	687mV @ Rated Output via RCA jack

Output Impedance:	Balanced or unbalanced 8-ohms, 25V, 25VCT, 70V; 4-ohm direct unbal.
Output Regulation:	Better than 2dB from no load to full load
Variable Mute Range:	4 steps, -60, -21, -10, 0dB (Aux 1 & 2)
ALC:	Distortion - less than 0.5%; Compression - 25dB
VOX Threshold:	Input 20mV (VOX control max. CW position)
Mic Precedence:	-60dB (via terminal strip Mic 1, 2, 3, 5/Tel, 6/Aux, Aux 2
Loudness Contour:	+8dB @ 100Hz, +4dB @ 10KHz (Aux 1 & 2 control at 1/4 CW position)
Aphex Aural Exciter:	Type A9
Overload Protection:	Electronic with automatic reset
Thermal Protection:	105°C (220°F) thermistor attached to heat sink
Line Fusing:	Resettable circuit breaker (GS35/60/100/150), Slo-Blo Fuse 6A/125VAC (GS250)
Dimensions:	16.5"W x 3.5"H x 12"D All Models

Shipping Weight:

GS-35 —	19 lbs
GS-60 —	24 lbs
GS-100 —	28 lbs
GS-150 —	31 lbs
GS-250 —	33 lbs.

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